

# SCHOLASTIC COACH



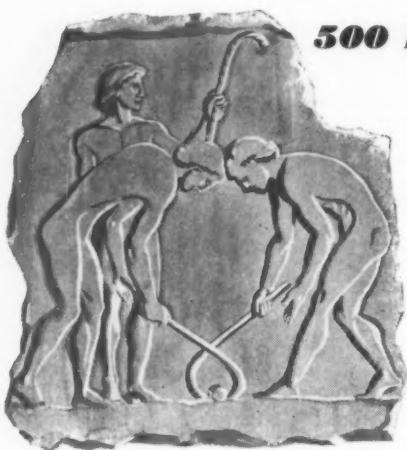
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# NAVY





500 BC

**FIELD**

**Field Hockey** is the oldest ball and stick game extant, going all the way back to the Greeks and Persians of 500 B.C. For centuries it was played under various names. The Irish called it "hurley"; the Scotch, "shinty" and the English, "bandy." The French were the first to call it "hocquet." But it was the English who, in 1875, standardized the rules. In recent years it has become a great girls' game. Before the war, there were international matches and world series.



1943

**HOCKEY**

1879

**and ICE**

**Ice Hockey** first saw the light of day in 1879 in Montreal, Canada. A McGill U. graduate got the idea from field hockey and a friend wrote the first rules. Early players wore striped suits and striped caps, and used walking canes and stripped lacrosse clubs for sticks. But by 1890, when the great Ontario Hockey Assn. was formed, the game was much as we know it now. Today, with the growth of many big amateur and pro leagues, hockey is a national pastime in Canada and the United States.



1943



In addition to nets for athletic activities, The Linen Thread Co., Inc., is manufacturing nets

and aircraft linen cords for America's rapidly expanding Armed Forces here and abroad.

**The LINEN THREAD CO., Inc., 60 E. 42nd St., N.Y.C.**

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## Tomorrow . . . a grenade

ALREADY the kinks are coming out of his delivery . . . he's getting his curves and speedball under control. Yes, this season he'll do you proud, Coach. And his teammates, under your patient instruction, are shaping up, too—into a smart, smooth-working, winning unit.

*But that's only the warm-up, really!*

TOMORROW, those boys may be teamed up in a flying fortress . . . on a destroyer's gun crew . . . or in a commando squad, storming enemy emplacements. They'll be shoulder to shoulder with other brave American lads, too—and the team spirit, the

conditioning, the stamina and punch you and fellow coaches helped develop will make them winners in the toughest game of all, *modern war*.

So keep up the good work, Coach. Nothing must interfere with the great job you're doing—building future fighters . . . strong, steady-nerved workers for the home front.

Now as always, you can count on Bike for the kind of dependable, long-lasting support so vital to their athletic training period. Bike will continue to supply the best possible protective garments under existing conditions.



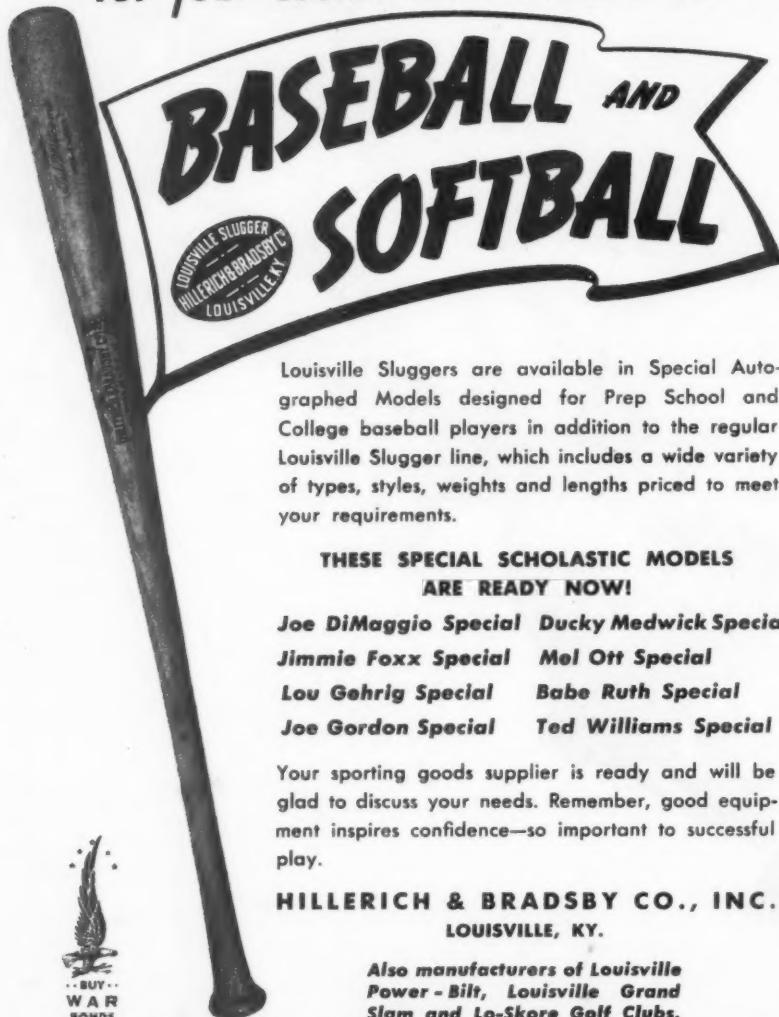
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SCHOLASTIC COACH

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# SCHOLASTIC COACH

Reg. U. S. Pat. Off.

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By H. V. Porter

Except for trampoline pictures, all photos in this issue are U. S. Navy Official Photos.

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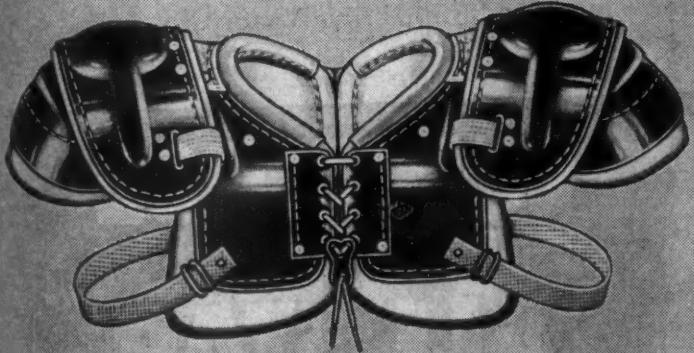
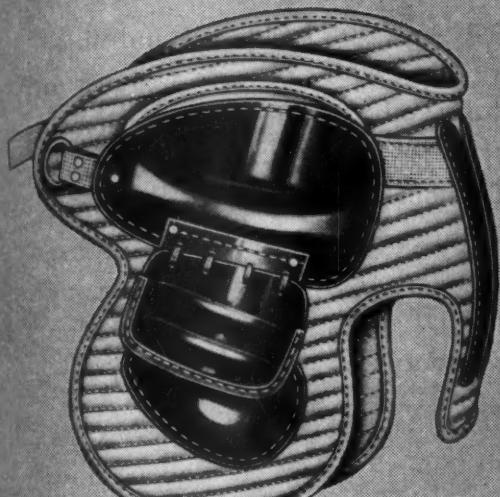
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FEBRUARY, 1943



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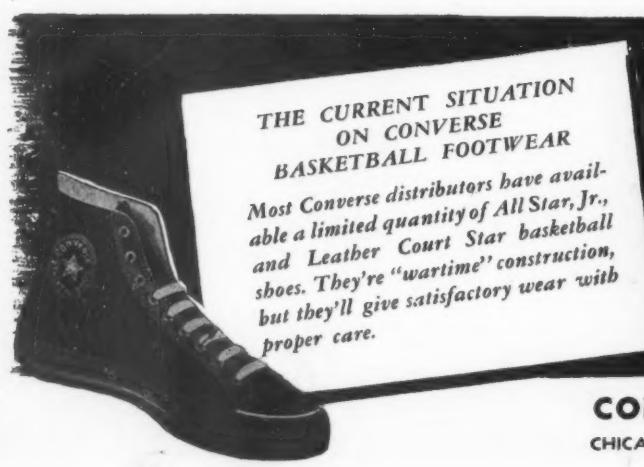
# Tribute TO A TRADITION

**A**WARD of the coveted Army-Navy "E" to the men and women of the Converse Rubber Company, "for fine achievement in the production of war equipment," also pays tribute to a Converse tradition. A 35-year old tradition of keeping ahead of the game... of doing things just a little better than the "book" calls for.

THAT'S WHY Converse was the first manufacturer of canvas footwear to design

shoes especially for basketball and allied sports. That's why Converse was first to establish basketball clinics under such men as "Chuck" Taylor and "Bunny" Levitt... both of whom are now serving in Uncle Sam's armed forces. That's why Converse All Star Basketball Shoes have consistently out-sold and out-performed all other basketball footwear.

IT'S A TRADITION Converse shares with the basketball-trained youngsters who are now carrying the ball to our enemies... the American tradition of playing to win that must, and will, bring Victory.



#### THE CURRENT SITUATION ON CONVERSE BASKETBALL FOOTWEAR

Most Converse distributors have available a limited quantity of All Star, Jr., and Leather Court Star basketball shoes. They're "wartime" construction, but they'll give satisfactory wear with proper care.

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CONVERSE RUBBER CO., Malden, Mass.  
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# Here Below

## QUESTIONS AND ANSWERS ON HIGH SCHOOL

### ANGLE OF THE NAVY'S FREE COLLEGE PLAN

SEVERAL months ago the departments of War and Navy broached a plan to mobilize several hundred colleges and universities for training young men in the armed forces.

This program, which is now swinging into action, merits your careful consideration. Since it is definitely slanted towards high school graduates, your juniors and seniors will want to know all the details. These will be given here in question and answer form.

But first it should be clearly understood that, while the project was announced jointly, the Army and Navy will operate independently.

The Army is interested principally in technicians. Passing the course will not necessarily mean a commission.

The Navy, on the other hand, is definitely angling for promising officer material for the Navy, Marine Corps and Coast Guard. The boys selected will be given a more general and a longer course in which they will be trained as officers as well as in technical specialties.

Since this issue is devoted to the Navy, we will confine ourselves here to the naval aspects of the program.

Following are the questions most likely to be asked by your boys, and the answers you may give them.

#### What high school boys will be eligible for college training?

Young men, 17 through 19 years of age, who are high school graduates or who have an equivalent

education, may apply for college training under the Navy program. The boys 18 or over may make the applications when called for induction, but there is no assurance they will be picked. The boys must be citizens, organically sound, without physical disabilities, and must have not less than 18/20 vision.

#### Will men selected for college by the Navy have to go through a period of basic military training such as is required by the Army?

Not necessarily. A boy entering the service who is picked for college training may go directly to one of the selected schools if the program is operating at the time of his induction.

If called for induction before the college system is ready, he will have to go into service and apply for college training with the recommendation of his commanding officer.

As far as possible he will be sent to a college of his choice, if it is one of those taking part in the naval program. Candidates may also express their choice of branches of the service, but this preliminary choice will not be binding on them or the Navy. The student will wear a uniform and receive pay of an apprentice seaman or Marine private. He may ask at any time during the college course to be transferred to aviation training.

#### How long will the college courses last?

From eight to 24 months, depending on the branch of service. Courses for those studying to be-

come medical or dental officers, engineering specialists and chaplains will take longer.

The first eight months will emphasize college work in mathematics, science, history, English, engineering drawing, and physical training. Students who already have covered certain required courses satisfactorily will be allowed to substitute other subjects from the general college curriculum.

#### Will the naval students be under military discipline?

They will. There will be at least one naval officer at each college. The students will be given naval drills and exercise. The Navy Department will pay for their tuition, quarters, food, and medical care.

#### Will college or naval authorities give the examinations?

The college authorities will give the regular scholastic exams. But, in addition, the Navy will give achievement exams at the end of the first eight months. These exams will be used to determine the future assignment of the students.

#### Will all who pass be given commissions?

All those who pass will be given further special training in the Navy, Marine Corps or Coast Guard. Those who finish satisfactorily will be commissioned in the reserve of their branch of service.

#### Can a 17-year-old boy who will graduate this term enlist for Naval Aviation?

Yes, but he must be outstanding. If he can meet the physical requirements (see page 9 of January issue) and is in the top half of his class, academically, he may enlist now as a seaman in the Naval Aviation Reserve. After graduation and upon reaching his 18th birthday, he will be placed on active duty as an aviation cadet.

At this time the 18-year-old graduate cannot enlist for Naval Aviation. The only way he can get into the Navy is to make a specific request to his draft board. Once in the Navy he may apply for the college training program.

## HERE'S TO COMPETITIVE SPORTS

### FOUNTAIN-HEAD OF AMERICA'S STRENGTH

By L. B. ICELY, President

A nation's strength is the strength of her people. Our forefathers were hale and hearty men because their way of life made physical strength imperative to survival.

Today our life is soft by comparison. Food, shelter, clothing come to most of us without physical effort.

Only one American way of life insures strong, virile, durable bodies for our youth.

Our vigorous, competitive sports take the place of the pioneers' unavoidable exercise. Without these sports to develop muscles, stamina and courage our youth would be soft and our nation would be weak today.



So here's to competitive sports—America's fountain-head of strength—the present-day means by which America's boys and girls develop the physical fitness to survive both war and peace.

And here's to basketball, one of our highly competitive sports, participated in by millions of our youth.

So far as our war equipment production and available materials permit, we will continue to supply the sports equipment so essential to America's physical fitness programs among our fighting forces, our production workers and civilian population.

WILSON SPORTING GOODS CO., Chicago, New York and Other Leading Cities

IT'S WILSON TODAY IN SPORTS EQUIPMENT



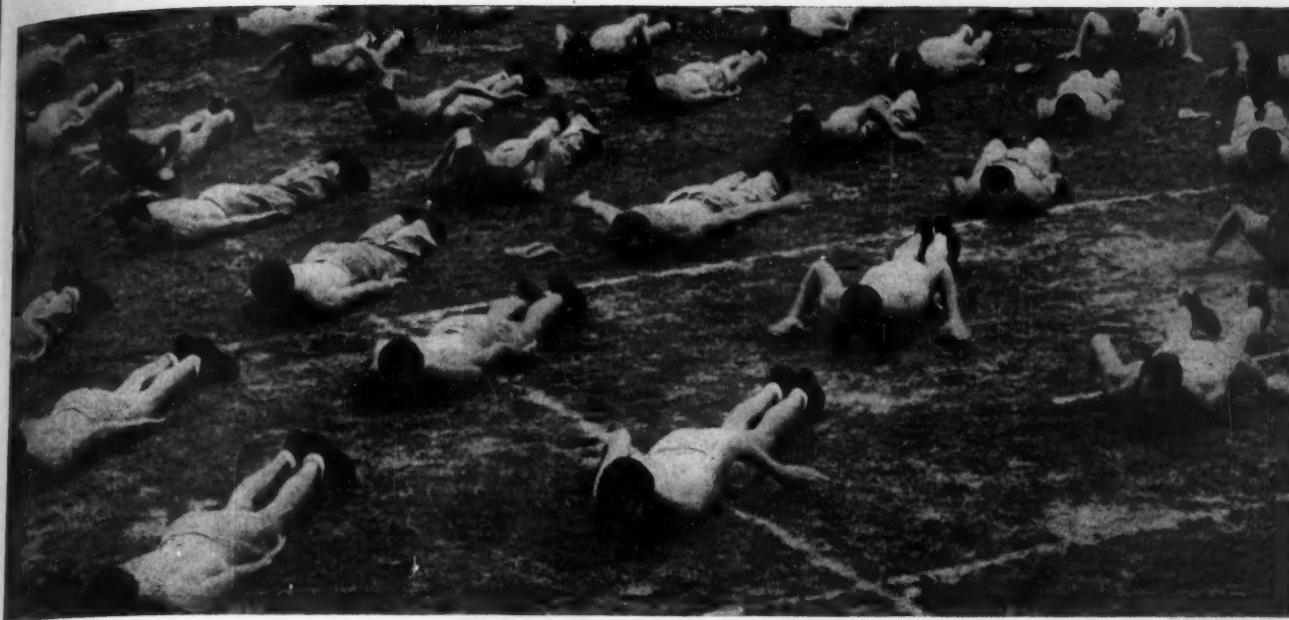
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## THE NAVAL PHYSICAL CONDITIONING PROGRAM

By J. J. Tunney, Commander U.S.N.R.

Commander J. J. "Gene" Tunney, former world's heavyweight champion, helped design the Navy physical fitness program and now directs it.

**M**ODERN total war hits the human organism with a terrific impact. On desert sand, arctic tundra, in equatorial jungle, in the stratosphere and on the ocean, it is carried on with terrifying speed. Man is subjected to staggering amounts of stress and strain.

To meet these physiological demands, the U. S. Navy has attempted to acquire and maintain the highest possible degree of physical fitness. An allusion to physical training in General Order 122 of August 18, 1939 stated that Commanding Officers should encourage all officers to engage in physical fitness activities for at least 30 minutes daily. The extent to which this was carried out was "A custom more honored in the breach than in the observance."

The first order pointing toward this goal was issued by the Secretary of the Navy on October 18, 1940. It read as follows:

"Modern war requires the acme of physical fitness and fighting edge. Nothing shall be left undone to insure that all officers and men of our Navy are properly conditioned to meet the utmost demands of physical endurance. Paragraph 8 of General Order 122 must be considered a minimum (5) requirement. All commands

afloat and ashore will immediately institute adequate and systematic exercises to bring personnel to the peak of physical fitness. Such measures will contribute to the continuance of the present high morale of the Navy."

Since this first order, several official directives have been issued by the Chief of Naval Personnel guaranteeing adequate time and competent instructors to bring all Navy personnel to the peak of fitness.

In December, 1940 the current physical fitness program was born. It consisted of one officer and an idea. A study was made of the physical fitness needs of the Navy blue-jackets. April, 1941 witnessed the procurement of four men, with degrees in physical education from accredited universities, to institute an experimental program at a Naval establishment in Florida.

Results of the Florida experiment were so encouraging that in the summer of 1941 the Chief of Naval Personnel authorized the procurement of twelve more physical fitness specialists.

At that time the civilian physical educators were enlisted as Chief Boatswain's Mates (highest non-commissioned rating in the Navy), since it was considered desirable to give these young college men a rating consistent with their training. Soon afterwards The Bureau of Naval Personnel established a new classification for men in this branch of the service, namely, Chief Spe-

cialists (A), meaning Specialists in Athletics.

Since these early beginnings the program has expanded to include over 5,000 Chief Specialists (A) and several hundred officers who maintain in all Naval Personnel the peak of physical fitness.

Originally the Navy's Physical Fitness Program was under the cognizance of the Section on Welfare and Recreation. However, expansion made it necessary to establish an independent Physical Fitness Section under the direction of Commander J. J. Tunney. Carrying out the physical fitness program in each of the Naval Districts and at other Naval establishments are highly qualified physical education specialists taken from civilian life and commissioned in the U. S. Navy. A partial list of these men follows:

E. D. Mitchell, U. of Michigan  
T. N. Metcalf, U. of Chicago  
A. W. Thompson, U. of West Virginia  
E. C. Davis, U. of Pittsburgh  
Charles Giaque, George Williams Col.  
G. M. Gloss, Louisiana State U.  
Paul Bender, Iowa St. Teachers' Col.  
Carl Olsen, U. of Pittsburgh  
Don C. Seaton, Illinois St. Director  
Paul Washke, U. of Oregon  
Wm. Dunn, Pasadena Jr. Col.  
R. J. Francis, U. of Wisconsin  
Max Farrington, George Washington U.  
C. E. Forsythe, Michigan St. Director  
J. J. Powers, N. Y. Daily News  
Wm. Rinehart, George Washington U.  
Hal Williams, Leland Stanford U.  
Ray Flaherty, Washington Pro. F'tb'll

(Continued on page 19)

# YOUR JOB IN THE NAVY

## BASIC REQUIREMENTS FOR 22 TECHNICAL OPPORTUNITIES



### BOATSWAIN'S MATE

**DUTIES:** Do all kinds of canvas work, and hoisting with block and tackle. Handle rope, wire and anchor chain. Know Navy signals. Handle power boats and sailboats under all conditions. Steer ships. Chart a course by compass. Direct salvage operations.

**RELATED CIVIL JOBS:** Rigger foreman. Hoist operator. Sailor.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Force and motion. Liquid pressures. Magnetism. Weather and tides. Knowledge of pulleys.



### TORPEDOMAN'S MATE

**DUTIES:** Lubricate, assemble, charge and fire torpedoes. Understand the mechanism of torpedoes. Predict accurately their performance at various distances and under different conditions. Take part in mine laying and dropping of depth charges.

**RELATED CIVIL JOBS:** Mechanic. Gunsmith.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Force and motion. Heat pressure on liquids. Hydraulics and electricity. Combustion. Hand tool and lathe work.



### GUNNER'S MATE

**DUTIES:** Take complete charge of a gun and a gun's crew. Assemble and fire all types of guns. Handle ammunition. Understand principles of electric fire control. Handle mines and depth charges.

**RELATED CIVIL JOBS:** Gunsmith. Mechanic.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Hydraulics. Force and motion. Combustion. Hand tool and lathe work. Knowledge of pulleys.



### QUARTERMASTER

**DUTIES:** Steer the ship. Take soundings. Use range finder. Plot bearings. Operate signal control apparatus and searchlights. Correct sailing charts. Determine ship's position by sun and stars. Navigate by dead reckoning, radio bearings and soundings. Send and receive International code by blinker, searchlight and semaphore.

**RELATED CIVIL JOBS:** Ship pilot. Navigator. Hydrographer.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Weather and tides. Light and sound. Optics and electricity. Spelling. English.



### MUSICIAN

**DUTIES:** Direct band in absence of leader. Play standard band music. Read music at sight. Help band members to learn music. Know fundamentals and theory of music.

**RELATED CIVIL JOBS:** Band musician. Orchestra leader. Music teacher.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** The properties of musical instruments. Sound. Ability to play at least one band instrument.



### AVIATION PILOT

**DUTIES:** Pilot planes and airships. Serve as plane captain. (Special requirements—must pass physical, must be a high school graduate.)

**RELATED CIVIL JOBS:** Private or commercial airplane pilot.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Civil aeronautics training. Private pilot's license. Navigation and trigonometry. Theory of flight. Knowledge of engines.

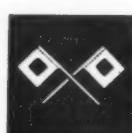


### YEOMAN

**DUTIES:** Take charge of ship's office. Take dictation, write Navy letters. Prepare reports. Operate duplicating machines. Use Navy filing system. Keep personnel records. Type, route and file correspondence. Handle routine details of enlistments, discharges, transfers, promotions, transportation, and travel. Know benefits available to enlisted men and how to get them.

**RELATED CIVIL JOBS:** Clerk. Typist. Secretary.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Typewriting. Shorthand. Bookkeeping. Operation of adding machines.

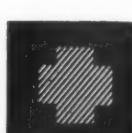


### SIGNALMAN

**DUTIES:** Stand signal watch on bridge. Send and receive International code by blinker, searchlight and semaphore. Take and receive flag signals. Identify flags of government departments, naval craft, foreign ships. Use pelorus and navigator's range finder. Operate searchlights and signal apparatus in darkness. Identify storm warning and distress signals.

**RELATED CIVIL JOBS:** Position in merchant marine. Sailing and handling private boats.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Weather and tides. Light and sound. Optics and electricity. Spelling. English.



### PHARMACIST'S MATE

**DUTIES:** Take charge of sick bay on board ship. Do minor surgery and first aid. Prepare and administer simple medicines. Give anaesthetics. Account for hospital and medical supplies. Have basic knowledge of anatomy, physiology, medicines, drugs, hygiene, sanitation, nursing, pharmacy.

**RELATED CIVIL JOBS:** Pharmacist in drug store. Hospital attendant. First aid instructor. Male nurse.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Elementary pharmacy, physiology, anatomy. First aid. Typewriting.



### ELECTRICIAN'S MATE

**DUTIES:** Use electrical tools. Perform soldering, brazing, electrical wiring. Operate and repair searchlights and electrical motors. Charge storage batteries. Wind armatures. Stand watch on main gyro compass and in main control room of electrically driven ships. Diagram and repair telephone circuits. Understand electrical remote automatic control of guns. Apply first aid in case of electric shock.

**RELATED CIVIL JOBS:** Electrician. Telephone repairman. Electrician's helper.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Electricity and its radio elements of electricity (A.C. and D.C.).



### MACHINIST'S MATE

**DUTIES:** Operate main engines and auxiliary engines on board ship. Adjust, repair and overhaul engines and other engine room equipment. Be familiar with the details of ship's drainage systems, distilling plants, internal combustion engines, evaporators and pumps.

**RELATED CIVIL JOBS:** Mechanic. Garage repairman. Engine mechanic. Power plant engineer. Marine engineer.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Mechanical drawing. Blueprint reading. Heat vapor pressure, hydraulics, ventilation, atmospheric pressure and electricity.



## STOREKEEPER

**DUTIES:** Take charge of ship's storeroom. Issue stock. Prepare reports on stock under Supply Department. Store, record, report, requisition and invoice stocks, afloat and ashore. Issue and account for clothing and minor purchases.

**RELATED CIVIL JOBS:** Stock clerk. Warehouse record clerk. Accountant.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Typewriting. Book-keeping. Operation of adding machines.



## SPECIALIST

**DUTIES:** Selected men for special assignment as athletic instructors, gunnery instructors, IBM operators, mail clerks, ordnance inspectors, photographers, recruiters, entertainers, teachers, transport airmen, welfare workers with chaplains.

**RELATED CIVIL JOBS:** Specialists in each of the above occupations.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Training or experience in above.



## AVIATION ORDNANCEMAN

**DUTIES:** Handle and take care of explosives. Use .30 calibre rifle, .45 calibre automatic and other weapons used in aviation. Have thorough working knowledge of bombs, bomb fuses, bomb sights, gas masks, torpedoes and releasing gear.

**RELATED CIVIL JOBS:** Gunsmith. Electrician. Instrument maker.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Knowledge of ignition. Explosives. Electricity. Magnetism. Energy.



## PRINTER

**DUTIES:** Take charge of ship's print shop. Set type. Operate linotype machine, printing press and duplicating equipment. Read proof. Make up books and pamphlets. Know inks, paper, colors and mechanism of all types of printing equipment.

**RELATED CIVIL JOBS:** Printer. Compositor. Linotype operator. Pressman. Proofreader.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** English. Spelling. Punctuation. Color composition and light.



## SEAMAN

**DUTIES:** Know naval drill duties and regulations. Know how to tie knots, steer ships, send and receive semaphore. Stand watch. Box the compass. Know gunnery duties and code flag signals.

**RELATED CIVIL JOBS:** Sailor in merchant marine.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Navigation. Experience in handling boats.



## PARACHUTE RIGGERS

**DUTIES:** Pack and repair parachutes. Actual jumping experience. Care and handling of fabrics. Operation of a sewing machine. Know about rigging and use of cargo chutes. Knowledge of life-saving equipment used in aviation.

**RELATED CIVIL JOBS:** Parachute maker. Fabric worker. Tailor.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** How to cut fabrics, make repairs. Use of sewing machine.

## POST ON YOUR BULLETIN BOARD



## AVIATION MACHINIST'S MATE

**DUTIES:** Assemble, service and repair airplanes and airplane engines. Splice aircraft wiring. Manufacture terminals and other small parts. Know principles and theory of flying. Do seamanship work necessary to airplane ground work.

**RELATED CIVIL JOBS:** Mechanic. Aviation mechanic. Engine maintenance man.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Shop math. Blueprint reading. Expansion of metals. Heat. Energy. Internal combustion engines.

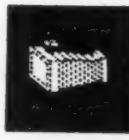


## AVIATION METALSMITH

**DUTIES:** Make temporary and permanent repairs to airplane metalwork such as radiators, pipe connections, instruments, and joints. Work all types of metal used in aircraft. Forge, braze, weld, electroplate, bend pipe. Use acetylene welding and cutting outfit, hand and power wood-working tools. Know the principles and theory of flying.

**RELATED CIVIL JOBS:** Metalsmith. Shipfitter. Tinsmith. Plumber. Aviation maintenance man.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Blueprint reading. Shop math. Heat expansion. Composition of forces. Electrolysis. Fusion and combustion.



## PHOTOGRAPHER'S MATE

**DUTIES:** Organize and direct operations of a naval photographic unit. Install aerial mapping cameras in planes. Make and assemble aerial mapping photographs. Operate motion picture machines and projection lanterns. Make and show slide films. Develop negatives and make prints.

**RELATED CIVIL JOBS:** Photographer. Movie cameraman. Movie projection operator. Slide film photographer. Aerial map maker.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Knowledge of light, color, optics. Familiarity with motion picture and still cameras.



## RADIOMAN

**DUTIES:** Operate Navy radio transmitting and receiving equipment. Maintain and care for radio batteries. Send and receive on all frequencies used by the Navy. Encipher and decipher Navy code messages. Adjust and repair radio direction finders and sound equipment. Understand basic operating principles of all Navy radio and electrical equipment.

**RELATED CIVIL JOBS:** Radio repairman. Licensed radio operator. Radio engineer.

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Electricity. Radio and sound. Vacuum tubes. Typewriting. English.



## CARPENTER'S MATE

**DUTIES:** Use hand and power tools to repair or replace all woodwork on board ship. Preserve wood surfaces in all parts of ship. Know various woods used in ship building, how to join and finish them. Take charge of ship ventilation, painting, water-tight control, drainage, laying of linoleum. Understand shoring and drydocking.

**RELATED CIVIL JOBS:** Carpenter. Shipwright. Patternmaker. Cabinet-maker. \*

**PRACTICAL KNOWLEDGE THAT WILL HELP YOU:** Blueprint reading. Knowledge of woods. Manual training. Familiarity with tools.

# TRAMPOLINING STUNTS in NAVAL AVIATION

(For article, see page 12)



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1 Landing on Back: Chin on chest, neck firm; contact shoulders and hips simultaneously; legs tuck or pike; don't get feet past the head.

2 Landing on Belly, Pull Through to Back: Pull hard with chest; push hard with hands; keep chin on chest; flex hips only after shoulders are almost in contact with mat.

3 Nose-dive, Duck, Landing on Back: Get hips past vertical line of head and shoulders; tuck late; land on shoulders.

4 Sitting, Half Twist to Sitting: Get maximum height before twist; swing legs under body like pendulum; land with hands on canvas in back of seat; lift with arms before twist.

5 Sitting, Full Twist to Sitting: Lean back slightly when landing on seat; throw an arch in back; throw one arm over twisting shoulder.

6 Belly, Half Twist to Belly: Keep head low; look past shoulders; keep body in semi-tuck position.

7 Belly, Full Turn to Belly: Keep head low; look past shoulders; keep in semi-tuck; pull hard with shoulders.

8 Back, Bounce Forward, Half Twist to Back: Twist either early or late; try landing on back and rebounding forward to belly, before twist; stress forward motion on rebound; swing on arm hard.

9 Back, Half Twist to Feet: Keep trunk horizontal; extend as you twist; Shoot feet upward before twisting.

10 Back, Full Turn to Feet: Head forward; extend feet forward and down on twist; twist as in ordinary pirouette.

11 Back, Full Twist to Back: Keep feet high throughout; trunk horizontal; twist as you extend; head low, feet high in landing; bounce straight up.

12 Bounce from Sitting to Back Flip: Do distinct sit down, then throw head and shoulders back and around fast, same landing as in half back to belly, back somersault to feet; lean slightly back on landing; land in tuck; whip legs over; grab under thighs.

13 Sitting, Half Back to Belly: High bounce; tuck; shoot feet up.

14 Knee' Bounce to Front Flip: Lean slightly forward; lift with shoulders; tight tuck.

15 Front Flip: Lean slightly forward; tuck head under with chin on chest; lift up with arms; bounce high; tuck tight, grasp shins with hands, lift up at back of shoulders; hunch shoulders.

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1 Back Flip (Tuck): Throw head back; get maximum height before tucking; grab shins and pull into tight tuck.



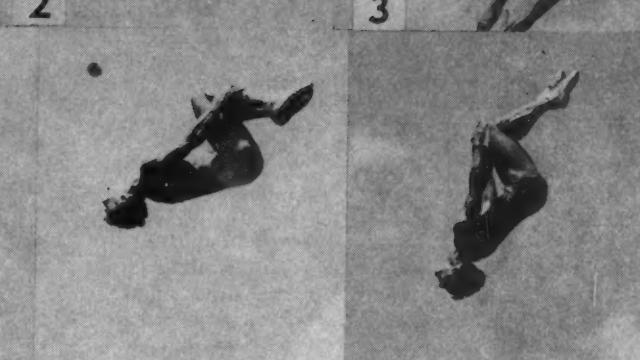
2 Back Flip (Layout): Head back hard; lift high with arms and shoulders; force arch in back; trail with feet.



3 Half Back Flip to Belly: Throw hard with head; lift straight up; trail with feet; land flat on belly; bring arms in at side of shoulders.



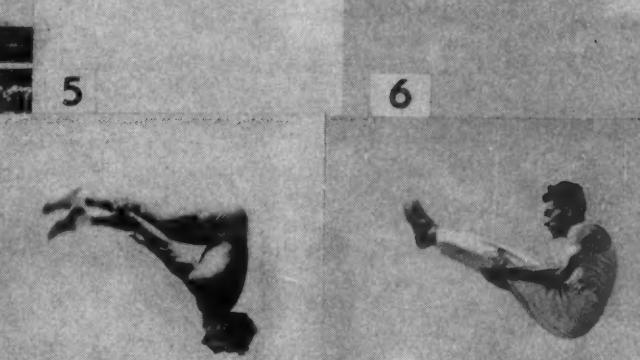
4 Supplement to preceding shot, landing on the canvas.



5 Half Back Flip to Belly (Tuck): Grab early tuck; head back; don't lean back; throw feet up into air after tuck; after tucking throw arch in back.



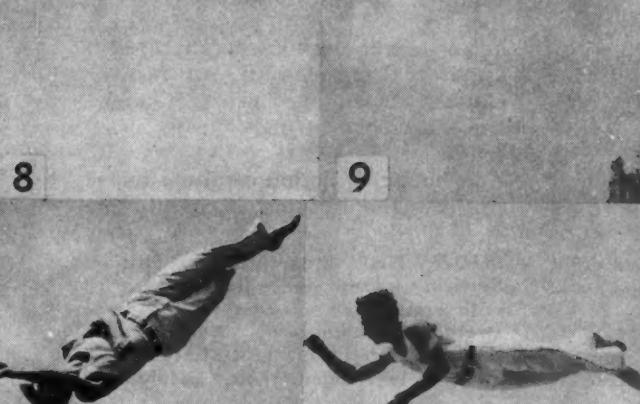
6 Another view of the preceding exercise (half back flip to belly).



7 Half Back to Belly (Pike): Keep head back; trail with legs, legs straight; pike early; lift straight up; arch back after pike.



8 Back One and Half to Seat (Pike): Swing legs through to seat; hands in back of seat on canvas; shoulders forward on landing.



9 Front One and Half to Shoulders (Pike): Fast, hard forward tuck; pike out and look at mat as one flip is completed; continue revolution throughout; tuck head under after one turn and land on shoulders.



10 Back Flip with Half Twist: Keep in layout position; look at canvas after completing half of flip before turning head; turn head sharply; upon landing kill the spring by flexing the knees.



11 Back Flip with Full Twist: Up and over shoulder motion with arms; keep looking over same shoulder until completion of twist; keep body in straight layout position; lift for height.



12 Another shot of the back flip with the full twist (No. 11).



13 Forward Flip with Full Twist: Complete brandy in air, then finish with half twist; keep eye on canvas for first half of tuck; pull back hard with shoulder.



14 Front Flip into Trampoline: Stress height; tight tuck; spin fast.



15 Front Dive onto Shoulders: Stress height; land on back of neck.



# TRAMPOLINING IN NAVAL AVIATION

By Lt. H. D. Price and Ens. N. C. Loken

Before taking over the directorship of the gymnastics and tumbling program at the U.S. Navy Pre-Flight School at Iowa City, Lieutenant Hartley D. Price was gym coach at the University of Illinois. His collaborator, Ensign Newton C. Loken, a member of his staff at Iowa, was 1942 national collegiate all-around champion. In the preparation of their article, the authors acknowledge the assistance of Larry Griswold, Mr. and Mrs. George Nissen, and Ensign Joseph Gialombardo.

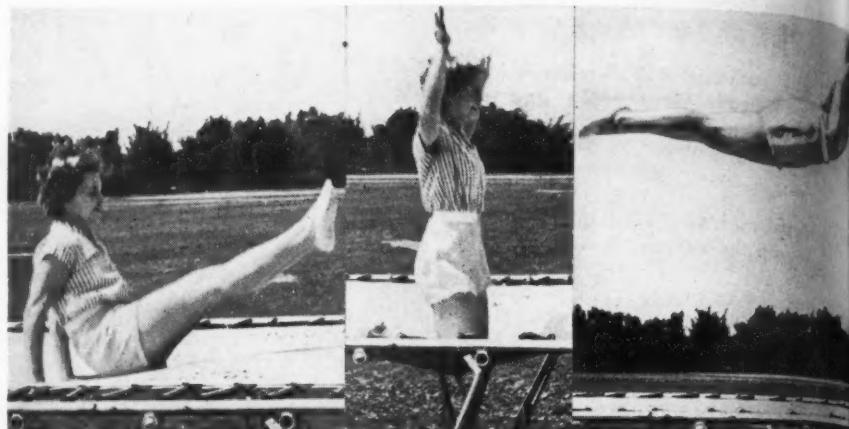
**O**F THE sports activities that have carryover value to aviation, perhaps none is so clearly worthwhile as gymnastics. In the Naval Aviation physical fitness program, much emphasis is placed on gymnastics. This part of the program aims:

1. To train the native sense of balance.
2. To equip the future pilot with strength and skill for emergency situations requiring climbing, vaulting, tumbling, and balance.
3. To develop daring and courage.
4. To accustom the cadet to being upside down for prolonged periods.
5. To teach landing and falling without injury.

Considerable attention is paid to the trampoline, an activity which helps orient the body in space. The apparatus consists of a taut piece of canvas suspended three feet above the floor by springs on a metal frame.

A bouncing action on this surface projects the tumbler high into the

**BELOW:** First three pictures, Straight Bouncing — land on balls of feet, lift with arms, keep eyes on canvas, body straight; Landing on Hands — arms straight, head up, hips back, body straight, legs together, toes pointed.



A specialized exercise program to develop balance and control of the body in air.

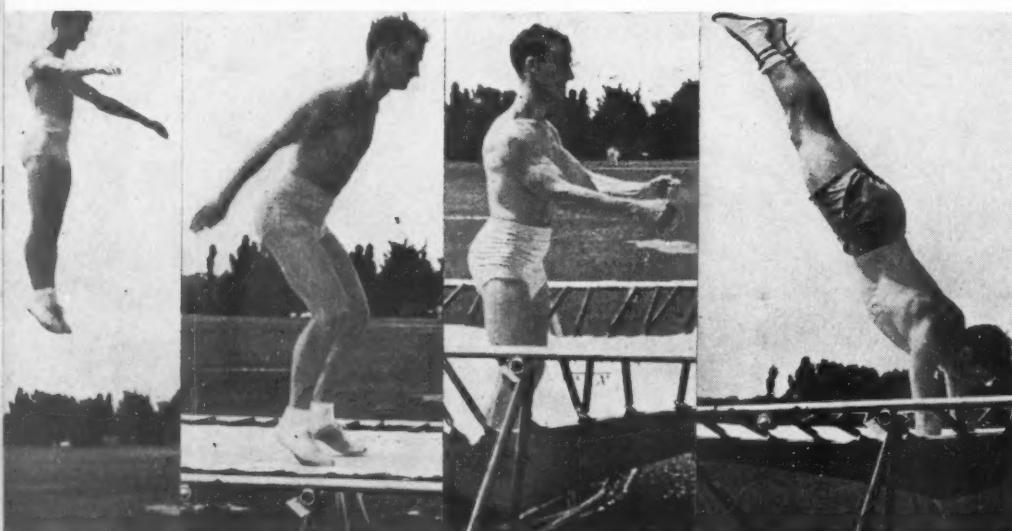
**ABOVE:** From left to right, Landing on Seat—land flat, legs straight, hands in back of seat, shoulders ahead of hands, don't raise feet too high, don't lean back; Landing on Knees—keep trunk erect, hips firm (no squat), insteps contact mat (not toes); Swan to Belly—keep head up, don't get feet too high, land flat, bring arms in upon landing, start with low bounce.

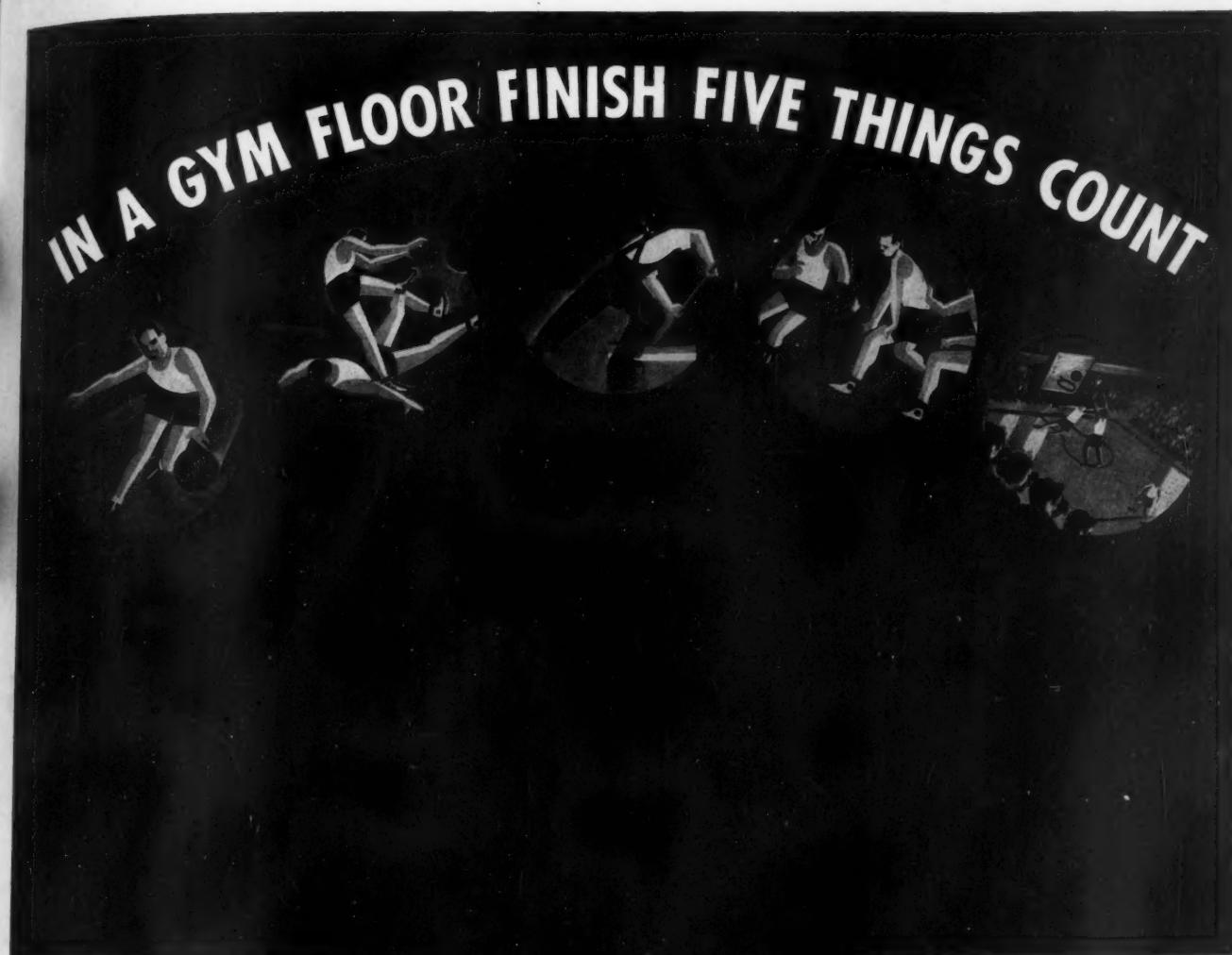
**LEFT:** Top, Landing on Belly, slight tuck before landing—open straight out when about 3 ft. above canvas, keep arms to side of shoulders, turn head to one side just before landing; Bottom, Jack-knife to Belly—keep head and shoulders higher than feet, keep legs straight, land flat.

air and, with the height obtained, enables him to execute somersaults of all descriptions. No exceptional skill is demanded and it is possible to graduate the activities with a high degree of safety.

The objectives of the trampoline are:

1. Balance and control of the body in air.
    - a. Static—positions.
    - b. Dynamic — motions: erect, sideward, horizontal (face down), horizontal (face up), upside down.
    - c. All combinations of the preceding motions and positions.
  2. Development of oneness with the plane.
  3. Timing and rhythm in coordinated motions.
  4. Confidence in the air.
  5. Conditioning.
- Without proper supervision, the trampoline may be very dangerous in a gym. Adequate safety measures, however, obviate these hazards. At least one spotter should be placed
- (Concluded on page 30)





## That's why 5350 coaches

LIKE every coach who is sold on Seal-O-San, you'll find that this specially developed gym floor finish will bring you five benefits that spell coaching success.

You'll get a slip-proof playing surface that will put "zip and go" into your winning plays. You'll get a floor finish that will help keep your winning combinations intact by preventing floor injuries.

Pulled muscles, torn ligaments or sprained ankles rarely happen on a Seal-O-San finished floor because the 100% non-slippery surface permits quick stops and sudden starts without undue strain on leg muscles.

## choose Seal-O-San

Also, you come into possession of a beautiful floor—a floor which will attract more and more "fans" as they admire the championship brand of pivoting, passing and shooting your team displays on Seal-O-San.

You can be sure that the immediate improvement in team play noticed by 5350 Seal-O-San coaches will also be repeated on your Seal-O-San floor.

Why not refinish your gym *now* with Seal-O-San and enjoy the benefits of a surface that gives you *everything*.

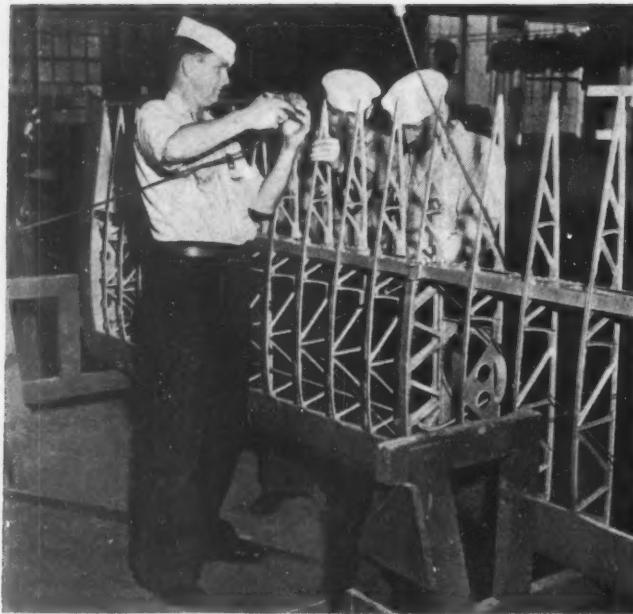
**THE HUNTINGTON LABORATORIES INC**

DENVER

HUNTINGTON, INDIANA

TORONTO

**SEAL-O-SAN**  
THE PERFECT GYM FLOOR SEAL AND FINISH



Aviation metalsmith repairing the metal wing of a plane.



Operating a radial drill in 16-week machinists' course.

## SERVICE SCHOOLS FOR BLUEJACKETS

By John T. Tuthill, Jr., Lt. Commander U.S.N.R.\*

**A**LTHOUGH enlistments in the Navy are not open to men over 18, a boy may still enlist if he is over 17 but under 18 (with the consent of his parents). He may join the regular Navy, which calls for a 6-year term of enlistment, or the Naval Reserve, for 2, 3 or 4 years.

Naval reservists will be released as soon as possible after the war. If the boy is 17 when he enlists, his term of service automatically ends when he becomes 21. He may then reenlist.

If the boy is wisely thinking of his future, he will think of the Navy in terms of job opportunities. The Navy wants young men eager to learn a trade. That opportunity is found in the Navy's excellent trade schools.

No promise is made at the time of enlisting that he will be placed in any of the Navy trade schools, because much depends on him. His conduct, education, ambition, aptitude, and adaptability will decide.

These qualifications are ascertained while he is taking his recruit training. He is given a series of simple tests to determine his general intelligence and basic knowledge. If he makes the right kind of showing, he is given an opportunity to apply for admission to any of the various trade schools.

Navy trade schools are divided

into five groups: (1) Electricity—Ordnance; (2) Communication—Clerical; (3) Machinist—Metal Worker; (4) Aviation Machinist—Aviation Metalsmith—Aviation Ordnanceman—Aviation Radioman; (5) Buglers—Hospital Apprentice, second-class—Diesel School.

All applicants are interviewed. Their classification marks are reviewed for the requirements of the school requested, and those who are best qualified are selected and enrolled in the school of their choice. Selection for all schools is based upon adaptability to learn the trade desired. So previous training is not essential.

By the time the recruit begins to worry about what trade school he wishes to enter, he has become indoctrinated in many of the traditions and customs of the Navy. He has learned to pay close attention, to keep his clothes marked, his effects neat and his rifle in good order. He has acquired a military bearing. He knows the names of his officers and he knows his general orders. He has learned to be courteous to visitors, to take his duty seriously and to make requests through official channels.

And still he scans the list. They are all there—more different jobs than he ever thought existed—and he can make his selection and work toward his goal. There is no reason for him to be a misfit or a square plug in a round hole.

A gunner's mate learns about the

operation of all types of guns, he finds, as he starts to analyze the different trades and ratings. Boatswain's mates and coxswains are leading Petty Officers, expert in seamanship. Torpedomen care for and operate torpedoes, which are the principal weapon of destroyers and submarines. A quartermaster is an assistant to the navigator who plots the ship's course and a signalman is a specialist in signaling with flags, semaphore, flashing light.

The fire controlman operates the mechanisms that control gun fire, and the electrician's mate must be familiar with all types of electrical work.

A radioman is an expert in wireless telegraphy, and a carpenter's mate must be familiar with all types of woodworking. A patternmaker must know carpentry and patternmaking and have some knowledge of molding. A shipfitter is an expert in metalworking and plumbing, and a printer is just what the word implies.

Painters must know how to paint, stain and cement. A machinist's mate is responsible for the operation of a ship's propelling machinery and knows machine-shop work, while a water tender must know his boilers and how they operate. A boilermaker, on the other hand, must see to their upkeep and repair aboard ship.

Molders must be familiar with foundry practice, and metalsmiths

(Continued on page 22)

\*Author of *He's in the Navy Now* (Robert M. McBride & Co.), from which the bulk of this article is reprinted with permission.

# HELP BUILD

# Physically Fit Youth

DURING the past decade, the sports world has enjoyed an unprecedented succession of record-shattering performances. What makes this even more remarkable is that over this period America was supposed to have gone "soft."

The answer to this paradox—a "soft" nation and a remarkable athletic record—does not lie in the perfection of new skills. We know that the technical aspects of our sports have been pretty well standardized. The answer, in a word, is conditioning—superior conditioning.

Scientific investigation of diet and training habits has yielded new formulas for the coach. This, combined with technical skill, has produced superior athletes.

If there is one thing on which all current experimentation is in accord, it is that alcohol has absolutely no place in the training regimen of athletes. We know you want to impress this fact on your students. Here is a poster that will help you to do it.

The program that is good for an athlete in his special field will be good for those who work in other fields. The same energy and strength that made Glenn Cunningham, now the director of health, physical education and athletics at Cornell College, Iowa, the greatest mile runner of all times, is needed to perform other tasks in life as important and physically trying as that of the athlete.

## HOW TO USE THIS POSTER

This poster is made especially for high school bulletin boards, so that your students may read its important message. It can be easily removed without in any way damaging your copy of *Scholastic Coach*. With a knife, or letter opener, just fold back the two staples in the center spread and lift out the poster. Then mount it on your bulletin board where its message can be read not only by the members of athletic squads, but also by all other students in your school.

If you wish additional posters, we will gladly send you any number up to 10 from the limited supply we now have. If for some special reason you desire a larger quantity, we will endeavor to fill your order. Write direct to this office or check the Master coupon on page 31 of this magazine.

**A Message from  
Glenn Cunningham,  
Miler Supreme,  
on the Meaning  
of Peak Condition**

**ALCOHOL EDUCATION (W.C.T.U.), 1730 Chicago Ave., Evanston, Illinois**



**FOR SPEED AND  
YOU NEED TOPN'C**





ENDURANCE  
IN'CH CONDITION

# "INFORMATION, please"

## FIVE QUESTIONS AND ANSWERS ON ALCOHOL

### *Is Alcohol a Stimulant?*

NO. It is a narcotic, and as such it suppresses or lessens the activity of living matter. Although it gives a temporary sense of well-being over a period of time it acts as a depressant to both mind and body.

### *Does Alcohol Increase Endurance?*

NO. Alcohol saps energy and greatly increases fatigue. The reason for this is that alcohol slows down the removal of lactic acid (the acid formed by sugar in the body every time we exercise) and unless this acid is quickly removed the muscles soon tire.

### *Is Alcohol Good for the Nerves?*

NO. Alcohol seriously upsets the nervous system. Its action as a dehydrant absorbs much of the moisture in the body which is so essential to proper functioning of the nerves.

### *Does Alcohol Improve Judgment?*

NO. One of the most serious effects of alcohol is on the cortex of the brain, or cerebrum, which directs our thoughts and actions. As a solvent, it disturbs the fatty lipoids and distorts the "messages" which are received from the sensory nerves and also reduces normal "inhibition" or caution.

### *Does Alcohol Aid Coordination?*

NO. It interferes with both voluntary and reflex movements of the body, and completely upsets that "teamwork" between mind and muscle called coordination.

## Fitness Program

(Continued from page 7)

It is the responsibility of these Officers to supervise the physical fitness programs in their respective districts or stations. Carrying out detailed assignments in various individual Naval Establishments are junior officers and Chief Specialists (A) who are eminently qualified to conduct Navy Physical Fitness Programs. These specialists are conducting programs which guarantee the acme of physical fitness for more than a million men of the sea.

Establishing differentiated curricula for over forty different types of Naval Training and Operational Activities has demanded extensive study. There has been the problem of getting a time allowance during the training day and the basic difficulty of having almost no facilities or equipment. Gymnasiums and outdoor athletic fields were, and still are, inadequate in proportion to the total number of men to be trained.

There also was the problem of procuring a competent and adequate instructional staff. Too, there has been the eternal problem of climatic variations to consider. Moreover, it was necessary to recognize limitations for physical fitness activities aboard submarines, carriers, cruisers and capital ships as well as at advanced bases, training stations and operational units.

### Tar tasks

The sailor's tasks involve long periods of standing, climbing up, down, and diagonally in close quarters, running, swimming, throwing, moving quickly from place to place, carrying heavy weights, and enduring under sustained effort in a variety of situations.

Additionally, there is the need to be able to swim and stay afloat for long periods of time as a means of self-preservation. Also the sailor must have the ability to relax completely so that in the few spare moments available under combat conditions, the quickest possible recovery from fatigue can be made.

With all these considerations in mind, a basis has been established for developing curricula for nearly 500 different Naval Activities representing upwards of forty classifications. Physical fitness programs have also been designed for all types of ships in both the Merchant and Fighting Fleets. Common factors include:

1. Basic Calisthenic Drills, participated in daily principally for the

### U. S. NAVY STANDARD PHYSICAL FITNESS TEST

Name	Rank or Rating	Station & Co. or		Ship and Division						
Date Taken										
Height										
Weight										
Age										
Posture										
Record of Events	No.	Pts.*	No.	Pts.	No.	Pts.	No.	Pts.	No.	Pts.
1. Squat-Thrusts										
2. Sit-Ups										
3. Push-Ups										
4. Squat-Jumps										
5. Pull-Ups										
<b>TOTAL POINTS</b>										
Total Points divided by 5 gives P. F. S.										
Gain in P. F. Score										
Instructor's Initials										
Judge's Initials										
Recorder's Initials										

\*See Scoring Chart to get points for each of events completed.

purpose of developing muscular endurance. Usually these exercises are given before breakfast.

2. *Running, Jogging, Grass Drills and Jog-Marching.* These various types of activities, pointed toward the development of cardio-respiratory endurance, are used in connection or alternated with the early morning calisthenics. An attempt is made to develop recruits to run a distance of two miles without undue fatigue.

3. *Tumbling.* This activity is gaining recognition as a basic part of the Navy's Physical Fitness Program. The particular values of tumbling lie in the development of agility, suppleness, strength and a "sense of whereabouts."

4. *Team Sports, Games and Relays.* Supplementary to the basic conditioning exercises is a comprehensive program of team sports, games and relays. At all times possible (three to six hours weekly), these activities are conducted on an interplatoon (intramural) basis. Only those team sports, games and relays are chosen which are of rugged and vigorous nature and allow for large numbers of participants.

5. *Swimming.* Great emphasis is placed upon the sailor's ability to swim and stay afloat. Little emphasis is placed upon speed or "style" swimming. However, the

sailor is taught to swim rapidly for a distance of at least fifty yards so that in an emergency he will be able to get away from immediate danger.

Nearly all of the time devoted to swimming instruction trains the bluejacket to be able to stay afloat for long periods of time. Basic elementary strokes of a non-fatiguing nature are emphasized. Those coming into the Navy with no swimming ability are required to take swimming instruction daily. Others are in the pool three times weekly. In the Navy it is axiomatic that "it is impossible to be too good a swimmer."

6. *Testing.* The physical fitness testing program is operating in all Naval Activities. The test is given at the beginning of training and at the end of each thirty-day period.

The test serves three purposes, namely: (A) to classify men at the beginning of their training program, (B) to stimulate men to higher levels of physical fitness and (C) to measure the degree of improvement produced in the men by the Physical Fitness Program.

It is interesting to note that a 30 percent average gain of improvement has resulted from the conditioning activities. Five events make up the test:

1. *Squat thrusts, done against time (one minute).* From attention

## SCORE CHART FOR NAVY TESTS

Check record made under proper heading. Trace horizontally to right to determine T Score. This score is the common denominator which evaluates all events on the same basis.

Push Ups	Pull Ups	Sit Ups	Squat Jumps	Squat Thrusts	T SCORE
54	23	100	75	..	80
53	22	97.9	73	40	79
52	..	92.6	71	..	78
51	21	89.1	69	..	77
50	..	86.8	68	39	76
49	20	82.5	66	..	75
48	19	79.1	64	38	74
47	..	77.8	63	..	73
45.6	18	74.6	61	..	72
44	..	72.3	59	37	71
43	17	69.1	58	..	70
42	..	67.8	56	..	69
41	16	65.6	55	36	68
..	..	63.4	54	..	67
40	15	61.2	52	35	66
39	..	59.0	51	..	65
38	14	57.8	49	..	64
37	..	55.6	48	34	63
36	13	54	47	..	62
..	..	52.3	46	33	61
35	..	51	45	..	60
34	12	49.0	43	..	59
33	..	47.8	42	32	58
32	..	46	41	..	57
..	..	44.5	40	31	56
31	..	43	39	..	55
30	..	42	38	..	54
29	10	40.1	37	30	53
..	..	39	36	..	52
28	..	38	35	29	51
..	9	36.7	34	..	50
27	..	35	33	28	49
26	..	34	..	..	48
..	8	33	32	..	47
25	..	32	31	27	46
..	..	31	30	..	45
24	..	29.0	29	26	44
23	7	28	..	..	43
..	..	27	28	25	42
..	..	26	27	..	41
22	6	25	..	..	40
21	..	..	26	24	39
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16	3	17	19	..	28
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15	..	..	..	..	26
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14	..	15	..	..	24
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13	..	..	16	15	21
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12	1	..	15	14	19
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8	..	..	..	..	8
..	..	..	11	7	7
..	..	..	..	6	6
7	..	8	..	5	5
..	..	..	..	4	4
6	..	..	10	..	3
..	..	..	..	3	2
..	..	7	..	2	1

position: (a) At signal the performer quickly bends forward, placing hands on deck (fingers pointed forward) in front of feet (squat position), with arms either inside or outside bent knees; (b) legs are then extended all the way back with toes on deck; (c) performer then returns to squat; and (d) at once stands up straight.

2. Push-ups, done as many times as possible. Chest must touch deck.

3. Sit-ups, done as many times as possible. From supine position, with legs straight and feet about 12 inches apart, hands joined behind head, elbows back, the scorer holding legs: (a) Performer raises upper body and bends forward enough to touch right elbow to left knee; (b) returns to supine position; (c) sits up as before but with left elbow touching right knee. Movements are continuous, no resting between sit-ups.

4. Squat jumps, done as many times as possible: From standing position, hands joined on top of head, palms down, feet four to six inches apart, left heel on line with toes of right foot: (a) Performer drops to a squat, sitting on right heel; (b) immediately springs upward until both knees are straight and both feet have cleared deck, changing at once to squat position so that he sits on left heel.

5. Pull-ups, done as many times as possible. Arms must be brought all the way down after each pull up.

The Navy score chart, which is based on T scores, and a personal record card are shown in the accompanying tables. In the Scholastic Coach score chart, the T scores only go up to 80, which roughly represents the maximum achievement of the high school boy (based on High School Victory Corps standards). In the Navy, however, the T scores go up to 100.

### Physical fitness index

The sailor's physical fitness index is arrived at by totalling his five T point scores and dividing by five. A swimming test rounds out the testing schedule.

Values of the Navy's physical training program are indicated in a recent communication from a Chief Specialist (A) who was in charge of physical fitness activities aboard the ill fated *Wasp*. Excerpts from his letter follow:

"Calisthenics were held each day, except Sunday, on the flight deck. These exercises were purely voluntary, but the men showed they desired them by turning out. Many days we had 200 to 300 men participating in the exercises and

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medicine-ball drills. Other men 'kidded' the participants about taking 'Setting-up Exercises' but it wasn't many days until they came up to join us. . . . The most vivid need of the men in our Navy was burned into my memory the day our ship was torpedoed. I saw men die because they could not swim well enough to carry themselves out of danger. I saw men almost exhausted and helpless, who told me later to enroll them in my next class of exercise. Why? Because they realized that they needed that conditioning to increase their strength, endurance and stamina. Many men came to me aboard the transport on our way back to the States, and expressed their thanks and how grateful they were that they had taken the exercises—they knew then how much it had helped them. Our executive officer made participation in daily exercises compulsory on board the ship returning to the States."

### Civilian Advisers

In planning and carrying into action these curricula for the U. S. Navy, the Physical Fitness Section has been unusually fortunate in having the technical advisory services of an eminent group of civilian physical educators. At the request of Rear Admiral Randall Jacobs, the Chief of Naval Personnel, the following men responded for service in the Navy's Civilian Advisory Committee: Dr. S. C. Staley, University of Illinois; Professor Phillip O. Badger, New York University; Dr. Arthur Steinhaus, George Williams College; Dr. J. B. Nash, New York University; Dr. C. H. McCloy, University of Iowa; Dr. Frederick Marnoney, Brooklyn College; and Sheldon Clark, Chairman Illinois Athletic Committee.

As part designer of the program, the author would like to acknowledge the far-sightedness of the nation's physical educators. Under difficult handicaps, physical education has struggled to final recognition and it is all due to the "Stick-to-itiveness" of a group of outstanding men in the field. Had these men not persevered in making physical education a recognized part of the better college curricula, the Navy's physical fitness program would not be the kind it is, or where it is today.

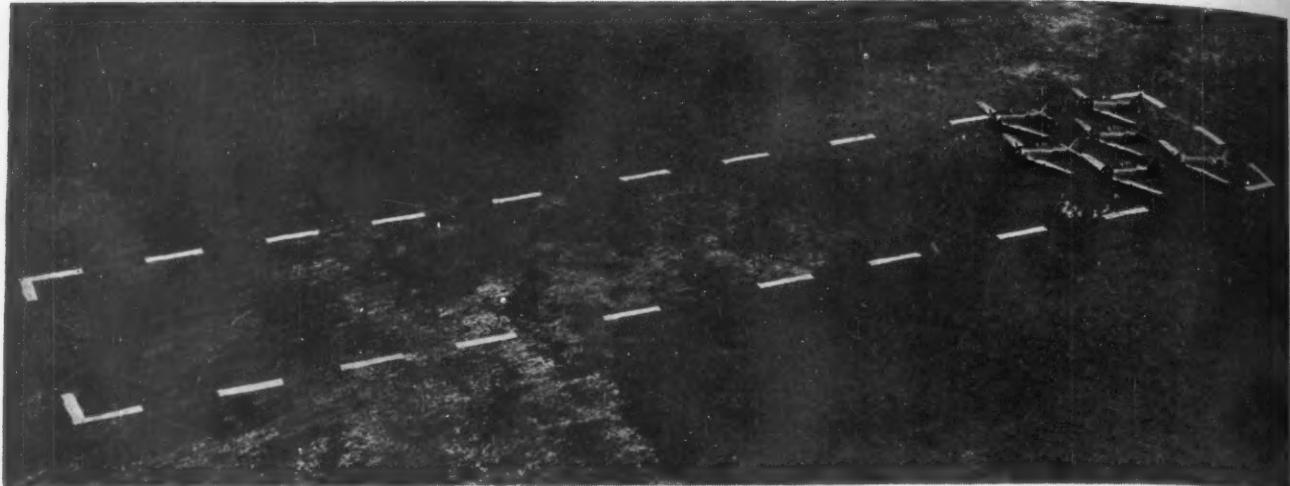
With the ability and enthusiasm of Naval instructors and directors, civilian advisers and a body of eager bluejackets, the Navy is pointing toward the development of the hardest hitting and ablest body of men ever afloat.



**I**f you must make replacements now, be more critical than ever of the quality of the merchandise you buy. Make your purchases with the future—40-X in mind . . . be certain that you're getting the extra years of use that may be necessary. Kahnfast Athletic Fabrics have proven their woven-in worth in years of strenuous service; now, more than ever, these sturdy materials will be chosen by careful buyers.



(WHAT IS 40-X? 40-X is 1943, the year of our Victory, the time that must be made as short as possible through everyone's United Effort)



with the working of iron, steel, copper, brass and similar metals. A yeoman types and knows stenography, while a storekeeper types and knows about the care and issue of stores. A pharmacist's mate assists medical and dental officers. A musician is a member of a ship's band, and a bugler executes bugle calls to carry out ship and shore routine and emergencies. After his first day Boots knows all about the bugler.

And so it goes. There are also ratings in the aviation branch of the Navy for some of these specialists.

Here, indeed, is the chance of a lifetime. The finest flying schools in the world await a man who qualifies. His instructors will be the men who introduced dive-bombing, aircraft carriers, catapult take-offs to the world. Scores of jobs are open

**Training pilots for air carrier duties.**  
White markers define the carrier's deck.

## Service Schools

(Continued from page 14)

today in naval aviation in addition to actual piloting.

The Navy enlisted man can become an expert aviation machinist, an aviation metalsmith, or he can specialize in aerial photography, gunnery, observation, navigation, parachutes, bombing. Every blue-jacket who receives flight orders, whether as a pilot or in any other capacity, automatically receives a fifty percent increase in pay.

Another thing that catches the bluejacket's eye is the pay schedule. If he hasn't realized it before it suddenly dawns on him that he has a chance to progress rapidly. Pay increases come regularly to the man who applies himself. By the end of a six-year enlistment period it is possible to be earning six times as much as when a man signed up.

After due consideration the blue-jacket finally decides, let us say, that he wants to enter machinist's school. He has received no promises, but his superiors at the Training Station have sized him up. They have observed his conduct, noted whether he was ambitious and adaptable. He is interviewed and his classification marks reviewed. Finally he is qualified and enrolled in the school of his choice. On receiving his orders he starts for Norfolk if he is not already there. He probably goes in a group escorted by a C.P.O.

On arrival, he delivers his papers to the Officer of the Watch and is directed to the school. In short order he is hard at it, living in a barracks and following much the same routine he learned at the Training Station. He conforms to all regulations, stands sentry watches and does routine cleaning in the school and barracks.

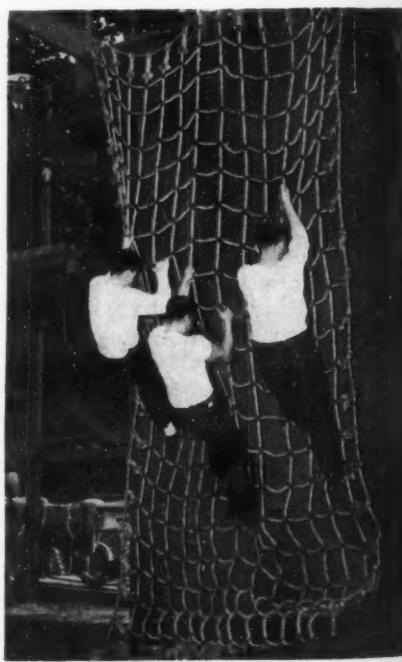


**Cadets of the Merchant Marine scrambling down the lines and landing nets in an abandoning-ship drill at Great Neck, Long Island, New York, training station.**

He has liberty on Wednesday from 4:30 P.M. until midnight, and on week-ends from noon Saturday until midnight Sunday, except when he is on duty. Some of his fellow students may be dropped because of scholastic failure, lack of application, misconduct, irresponsibility, but he makes the grade.

The greater part of his course consists of practical work in the various shops. The work of all the individual students is grouped around projects which are designed to teach the essentials of the trade, beginning with simple operations and progressing to the more complicated ones. He is graded on each project for accuracy, workmanship and speed.

The projects are under the supervision of an instructor who further (Continued on page 24)



**Use of the landing net on the emergency combat training platform, with the officer on 10 ft. deck supervising the technique of the descent.**

FEBRUARY, 1943



Gunnery practice aboard an aircraft carrier; crack crews are manning 20 mm. anti-aircraft machine guns.

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RUTHERFORD, N. J.



Navy signalman using "long glass" (telescope) to receive a blinker message from another ship. Blinker is shown behind him. His partner records and checks message.

(Continued from page 22) nishes each bluejacket with a "Project Sheet." This contains a blueprint of the finished work with an explanation of how the exercise is to be performed and references to textbooks where necessary. Certain exercises are examination exercises; for these the blueprint is furnished but the step-by-step description is omitted and the student thereby demonstrates his ability to plan his work.

Necessary instruction in shop mathematics and blueprint reading is given in the classroom.

The course, which lasts twenty weeks, is divided into five terms of four weeks each. During the first term, which is designed to give instruction in the use of hand tools and elementary shop practice, the student finds himself grouped with other bluejackets who want to specialize as metalworkers and woodworkers. The work consists of chipping and filing, drill-press work and drill grinding, reabutting and scraping bearings, pipe fitting, blacksmithing, tinsmithing, sheet-metal work, brazing, woodworking, care of tools, mathematics and blueprint reading.

At the conclusion of the first term the students are placed in one of the three branch schools where they begin to specialize. Thus, the bluejacket who wishes to become a machinist starts on lathe work—turning, facing, drilling and reaming, boring, taper turning and boring, eccentric turning, external and internal thread cutting, making slip and drive fits, making and fitting piston rings, general lathe work, tool

grinding. In the weeks that follow he learns shaper work, milling machine and general machinists' work.

At the same time those bluejackets who selected the metalworkers' school are applying themselves to blacksmithing, foundry practice, oxyacetylene welding and cutting, arc welding, coppersmithing, sheet-metal work, general metalworking and boilermaking. Those who chose the woodworkers' school are busy, meanwhile, with joiner work, patternmaking and boatbuilding.

Simultaneously, other bluejackets are attending the electrical, ordnance, communication, clerical and other schools, each following much the same routine, although the length of time varies for completion of the different courses.

Students at the communication and clerical school, for instance, follow the same course during the first term of four weeks in which they are drilled in typewriting, English composition, spelling, semaphore, range finding, radio code, and are given an outline of the various signal systems, with procedure, the use of navigational charts, and the general duties of a Petty Officer of the Navy.

At the end of this first term they are detailed for specialized instruction leading to qualification as radiomen, quartermasters, signalmen, yeomen or storekeepers. Most of them choose radio for their last twelve weeks, but the final decision in the matter depends upon the adaptability of each individual indicated by his work in the first term.

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During the last four weeks radio students have an opportunity to stand regular radio watches in the District Communication Office where they receive messages under actual service conditions.

As any bluejacket can learn by consulting the ably prepared recruiting literature, Class "A" aviation schools offer an intensive course of instruction in those skills essential to the work of the Petty Officer aviation rates. In the beginning, all men receive instruction in practical mathematics, mechanical drawing, blueprint reading and the use of hand tools. As the course progresses each man specializes in the work of one of the three aviation rates: Aviation Metalsmith, Aviation Machinist's mate or Aviation Ordnanceman.

#### Aviation metalsmith

The prospective aviation metalsmith specializes in the properties of metals, heat-treatment of metals, cutting, forging, and in those phases of welding and brazing essential to aviation. He will also study electroplating and those phases of geometry essential to cutting and fitting of the metal parts of planes.

The prospective aviation machinist's mate covers the bench, vise and floor work necessary to the machinist, and will receive instruction and practice in the use of all these power tools necessary to work of the aviation machinist. He will get practice in the operation, care and repair of the various types of aviation engines used in the Navy, and he must be able to disassemble and assemble such engines, to remove them from or to install them in planes, and to check all phases of operation such as carburetion, timing and lubrication.

The prospective aviation ordnanceman, in addition to receiving the basic instruction common to all men entering the aviation school, specializes in the assembly, disassembly, installation and care of all types of guns and machine guns used in naval aircraft.

He must understand the bore-sighting of those guns, their synchronization (where necessary) with propellers, and their mounting for most effective use. He must know how to use gun cameras; must know the markings, use and safety precautions in handling explosives and pyrotechnics; must understand the housing and release of torpedoes and bombs, and must know how to rig and release mobile high-speed targets.

The prospective aviation radio-man receives general radio training and in addition studies those phases

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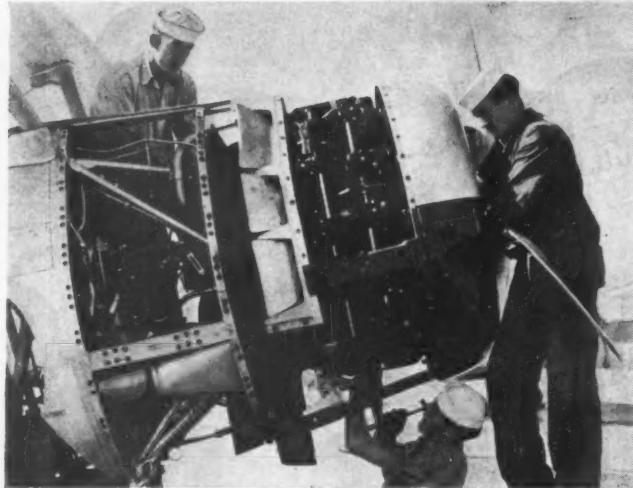
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**Aviation Machinist's Mate checking airplane engines.**

of radio peculiar to aircraft. He is also given instruction in free machine-gun operation.

In training school the bluejacket finds that the Navy has four general types of fighting planes and is constantly experimenting with new models. The design of each type is conditioned by the specific function it is to perform. Although these planes are primarily built for certain tasks, their design must also take into consideration the bases from which they will operate.

Planes operating from carriers must be fitted with wheel-type landing gear, while those that operate from battleships, cruisers, tenders and fleet air bases are seaplanes. The latter must be designed to withstand the shock of being catapulted from surface craft and the strain of being hoisted by cranes. Amphibian planes are equipped with both wheels and pontoons and may operate from either water or land.

Fighting planes are small, fast and highly maneuverable. They are manned by a pilot alone and operate from aircraft carriers accompanying the fleet. Most of them are quite small. They are armed with machine guns and occasionally carry small, light bombs. They have a relatively short cruising range because they do not carry a very heavy load of gas. Their primary mission is to attack hostile aircraft with their machine guns.

The observation plane has an important role in modern naval warfare. Since present-day guns are capable of firing their missiles such great distances, it is necessary for the officer controlling the firing batteries to have some accurate means of knowing how and where his shells are falling in relation to his objective.

To supplement his vision, the firing officer uses airplanes which fly



**A lesson on the holding and aiming of an aerial camera.**

## SERVICE SCHOOLS

(Continued from page 25)

about the point where shells are landing and which, by radio, tell the firing vessel how near the target the shots are falling. These planes are based on the vessels whose fire they assist in controlling. They are generally biplanes, are heavier and slower than the fighters. Two or three are usually assigned to a battleship or cruiser.

When they are needed they are shot, or catapulted, from a short track on an upper deck. This track turns on a table so that they can take off properly into the wind. Such planes also serve as scouts for the fleet at sea; when they are equipped with wheels instead of pontoons, they can serve the fleet Marine Force ashore. They carry light machine guns and small bombs, but their primary mission is to obtain and relay information, not to fight.



**PHARMACIST'S MATE** in action: One of the Navy's unsung heroes whipping up a prescription in his ship's dispensary.

A third type of naval plane is the bomber, which may be single-engined and carry a crew of two or three, or may be equipped with two engines and several heavy machine guns in addition to a heavy bomb load. Bombers vary in size, according to the number, weight and type of bombs with which they are armed.

Usually they can travel at a fast speed, although dive bombers, which use gravity in addition to their engines to gain speed, can travel much faster when diving. Approaching their targets, they usually turn out the "flaps" on their wings to prevent their speed from becoming too great for accurate bombing. Our largest four-engined bombers have a wide cruising range. They are heavily armed and carry crews of sixteen. Most of the details of their equipment are secret.

Fourth are the torpedo planes, which may also be used as horizontal bombers. They are armed with torpedoes quite similar to those found on surface craft. Because they must gain a favorable position in order to release their torpedoes, they have to depend on their speed and on smoke screens to conceal their whereabouts until they are within striking distance of their objective.

Naturally, they must fly close to the water. When they are only 50 or 100 feet above the water, they drop the torpedo which speeds forward under its own power while the bomber quickly turns and climbs out of reach of anti-aircraft guns. Such planes are based on carriers, tenders, or at shore stations.

Other types of planes are used in the Navy for training students, transporting materials and men between air stations, and for messenger service. As a rule, such

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planes are small and relatively simple to operate.

Almost any type of plane may be used for scouting duty, but the desirable characteristics for this purpose are high speed, long cruising radius and reliable radio equipment. These planes are usually two-seaters and base on carriers and cruisers.

Flying boats with the latest radio and navigational equipment operate independently of surface craft, except for the tenders which service them. They patrol large sea areas in the coastal zones or serve as observation and long-range scouts for the fleet.

The Navy has also had varying experiences with lighter-than-air craft and is still experimenting with them.

On completing his course at an aviation training school, a blue-jacket may find himself detailed to one of the giant aircraft carriers—the floating air bases that sailors call "covered wagons"—with their decks bare of any superstructure except for a slim conning tower far off at one side.

The aircraft carrier is an important and integral part of the fleet. It is capable of operating and serving large numbers of airplanes, and is a fast, long-range ship. Below its main flight deck are the hangar decks where many planes of all types are berthed. As they are needed, they are brought to the

flight deck by means of elevators.

The flight deck is about nine times as long as it is wide and measures approximately one-half acre, which is ample for taking off and landing. A device known as an arresting gear slows the planes when they land and prevents them from crashing into other planes or running off into the sea.

Aircraft carriers do not engage in battle and their principal defense is their speed. Some carry larger crews than battleships because, in addition to the ship's regular crew and the pilots, hundreds of mechanics are needed to keep the planes in fighting trim. They work in machine shops below decks and have access to storerooms filled with spare parts and supplies, including bombs and ammunition.

#### Loudspeaking system

Atop the turreted conning tower are the horns of a loudspeaker system used for relaying orders to pilots on the flight deck, where the planes are organized into squadrons. If three or four carriers accompany the fleet in a battle, they can send several hundred planes into the air in reasonably short order. This makes it possible for our Navy to establish efficient, temporary air bases almost anywhere in the world.

Bluejackets detailed as mechanics aboard these covered wagons know

their business. They have studied to prepare themselves for repairing or overhauling guns, boats and planes. While they were at work in the aviation training schools, plane after plane roared over the buildings. They became used to seeing planes moved into new hangars. Every man who goes through an aviation training school learns to repair and overhaul airplanes. He and others similarly detailed work with planes that never get off the ground, but which are constantly being taken apart, overhauled and repaired.

The Navy's equipment is so specialized that it prefers to train its men according to its own standards. There are few places outside the Navy where they can be trained as the Navy wants them.

Certificates of graduation are given by the Bureau of Navigation to the student who completes a course. Entries are made in the graduate's service record showing the school from which he graduated with final marks and class standing. Such a notation will read like this:

"Graduated from Class 'A' School I (a) 'Electrical School.' Especially qualified to strike for ratings of Electrician's Mate, Fire Controlman."

Whenever it is practicable, graduates are given ten days' leave of absence, plus travel time, subject to orders on hand. They are then



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Where most of the embryo Harry Jameses hope to wind up—the ship's band.

assigned to duty on board vessels of the fleet. If they want duty aboard any particular ship they may ask for it, and such requests are usually granted.

In referring to comparative naval strength, it is customary to discuss the number and size of each class of ship, the caliber and range of guns, speed and horsepower, and to think in terms of general strength. Yet these ships, without personnel highly trained in tactics, gunnery, engineering, communications and allied specialties, would not be effective.

One of the vital problems in the expansion of the two-ocean fleet is the training of personnel in order to make the most efficient use of the ships that are operating and those that are building. Specialists are needed to operate, overhaul and repair.

Aside from the schools conducted exclusively by the Navy for training men for specialists' ratings others have been opened in co-operation with the Vocational Education Program of the United States Office of Education. Such schools are located at Noroton, Conn.; Charleston, S. C.; Indianapolis, Los Angeles, San Francisco, New York City, Boston, Chicago, Detroit, Toledo, St. Louis; and Bainbridge Island, Wash. They offer ten basic courses in radio, visual signaling, Diesel engine operation, etc.

While these schools are primarily for training naval reserves, the reserves are also assigned to the established schools operated by the Navy on an equal basis with the regulars. Because ships of the Navy are complete communities in themselves, it is essential that there be an ample supply of trained specialists in virtually all lines of activity.

In addition to general shipboard

training in the various specialties, the Navy maintains service schools for special instruction. At every Training Station and at other places, such as the Naval Torpedo Station, Newport, R. I., the Naval Research Laboratory, the Sperry Gyroscope factory and the Naval Gun factory, schools for training enlisted personnel are maintained.

Candidates are selected for these schools from those who ask for particular instruction, who are considered particularly apt and desirable and who are recommended by their commanding officers. The instructors are commissioned officers and enlisted men who have been chosen especially for this work by virtue of their previous education and training.

Courses vary in length from six to thirty-eight weeks and the schools operate continuously, new classes being formed as soon as old ones have graduated. Instruction in service schools is both theoretical and practical. Much of the equipment used on board ship is duplicated in the schools for instructional purposes.

### Prep schools

The Navy also maintains two Naval Academy preparatory schools. Enlisted men who want to compete for appointment to the Naval Academy and who show qualities justifying their candidacy, are sent to one of these schools where they undergo a course of intensive instruction in the subjects on which they will be examined for entrance into the Naval Academy. From those who successfully pass the regular entrance examinations, not over one hundred are chosen each year to enter the Academy.

Since all enlisted men cannot be detailed for instruction at service schools, and since the schools cannot supply the demand for trained

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Aircraft recognition school, models contributed by High School Victory Corps

specialists afloat, every ship in the Navy maintains a stock of educational courses in pamphlet or book form for instruction in practically every naval subject. These courses are prepared by experts and include descriptive texts, diagrams, sample computations and questions to be answered in writing.

There are approximately one hundred educational courses grouped under the general headings of seamanship, engineering, communications, deck artificers, special branches, and general academic

subjects. These courses are available to all enlisted men free of charge and are printed at the Government Printing Office with funds especially appropriated for the purpose. In most instances they represent the most concise, practical, instructive courses on naval subjects that can be obtained.

In addition the Navy has produced moving pictures and slide films showing the operation of Diesel engines, gasoline engines, storage batteries, naval boilers, boat construction, first aid and many

other practical subjects.

The Navy is keeping up a fast pace in educational activities to the end that our personnel will be the best-trained and best-educated sailormen in the world.

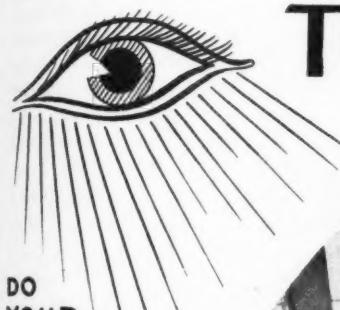
#### Naval aviation

Boys who are 17 and who will be graduated before June 30 may enlist now in V-5 (naval aviation) of the Naval Reserve. They will be enlisted as apprentice seamen and remain in that rating in civil life until they are 18 years old when their training as naval aviation cadets will begin.

They must submit proof that they are taking courses that will meet college entrance requirements, and that they are in the top half of their class. This also applies to high school graduates not in college. Both groups must bring with them proof of character and leadership from their high school principal and three teachers, plus a birth certificate and their parents' consent.

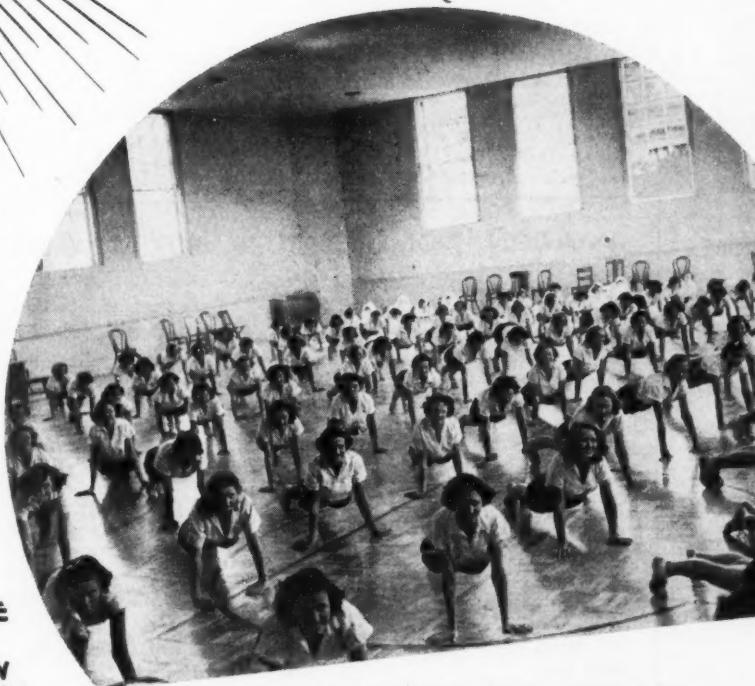
Those who enlist and drop out of school or fail to graduate will be ordered immediately to active duty in the Navy. On the other hand, some of the boys may be ordered into the Navy's new college program for a year, retaining their apprentice seaman rating, and then sent to a Naval Flight Preparatory School.

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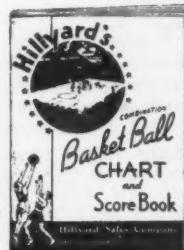
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## Naval Aviation Trampolining Program

(Continued from page 12)

at each side of the apparatus. Two men at each end are preferred. In addition, a safety belt should be installed above the trampoline for teaching the difficult tricks.

Some of the important fundamentals to be stressed include:

1. Smooth bouncing.

2. Proper use of the arms for maximum spring and balance. The arms should come up and down with the canvas. They should not swing in circles behind the body; the circles should be made in front of the body.

3. Landing with the feet about 10 inches apart. In the air, the feet should be brought together.

4. "Killing" the spring by bending the knees upon landing, so that the body is always under control, even when a trick is mis-timed. Thus, the tumbler will not be hurled out of the trampoline.

5. Learning the tricks in progression, from the simple to the difficult. Because they look so easy when they are smoothly performed, there is a tendency to underestimate the difficulty of the stunts.

6. Working with light shoes. If basketball shoes are uniform, it is better to work in socks.

7. Keeping in the center of the trampoline. Painting a huge circle in the center of the canvas aids the performer in locating the middle. At Iowa the target is represented by faces of Hitler, Mussolini, and Hirohito.

8. Keeping the eyes on the edge

of the canvas. This helps visualize the entire trampoline.

9. Landing on the balls of the feet and rocking to the heels.

Progression from simple to difficult tricks is essential. The tricks on pp. 10-11 are organized in terms of teaching cues.

Tumbling has always been regarded highly by all proponents of gymnastics and acrobatics. However, a study of the foregoing pictures shows that the trampoline affords opportunities for turns, somersaults, revolutions in the air, etc., which is lacking in tumbling. For example, on the trampoline, an individual may take off and land on the following parts of his body: feet, seat, knees, back, shoulders, belly, hands, hands and knees, reclining (rolling).

In tumbling, however, he is restricted to: hands, feet, rolls on mats.

It is possible to use airplane acrobatic terminology for some stunts. The accompanying chart shows some examples which may be enlarged upon.

The trampoline is an ideal piece of practice equipment for the school gymnastics and tumbling program. It accelerates progress and, in general, makes practice fun. A professional trampoline may be purchased for about \$165. But you can make one yourself for a few dollars by cross-weaving strips of inner tubes on a wooden frame eight by four feet.

### AVIATION NOMENCLATURE FOR TRAMPOLINE STUNTS

Condensed Airplane description of stunt	Take-off Position	Position of Body in Air	Movement of Body in Air	Landing Position	Gym Name for Stunt
Inside loop, feet to feet a. tuck b. pike c. layout	feet	either: a. tuck b. pike c. layout	(stick full back) positive pitch once around	feet	Backward Flip
Outside loop, feet to feet a. tuck b. pike c. layout	feet	either: a. tuck b. pike c. layout	stick full fwd. negative pitch once around	feet	Forward Flip
Sit down inside loop a. tuck b. pike	sitting	either: a. tuck b. pike	stick full bwd. positive pitch	feet	Backward Flip
Immelman Turn Belly Backward to Belly	belly	layout	stick back	belly	Belly pull; Bwd. ½ twist to Belly

## H. S. FOOTBALL RULES CHANGES

**S**PECULATION is rife on the fate of football for next season. But at this time there appears little cause for alarm. High school men may look forward to a healthy amount of interscholastic activity.

During the past season, transportation difficulties made it desirable to curtail or completely abandon the interscholastic schedules in some parts of the country. Reports, however, indicate that only about five percent of the schools discontinued the sport. The reduction in games was 20 percent.

The greatest change was in the distance travelled. A greater number of games with nearby schools were scheduled and travel reduced about 35 percent. For the new season travel will be further reduced and the larger conferences will be divided into two or more smaller groups. Under such conditions, a reasonable number of games can be scheduled.

Here is a brief summary of the major rules modifications for 1943. They also apply to the six-man game.

**Forward Pass.** Intentional incompleteness will now be classified merely as an illegal pass—penalty, loss of five yards from the spot of the pass and loss of down. A ball that is handed forward to any player who is clearly more than a yard behind the line is not considered a forward pass. It is understood that a lineman who has his feet one yard behind the line with his hands on the line, and who merely straightens up is not eligible to receive a handed pass, since he is not clearly more than a yard behind the line.

**Kicks.** If a kick is first touched by a kicker, then touched by a receiver, and again touched by a kicker, the second touching by the kicker is disregarded (not considered first touching). If the kickers touch a kick behind the line, it is not considered "first touching" even though the kick may have crossed the line and rebounded. Either K or R may advance the ball.

The rules relative to free kicks will be made identical. A field goal may be scored by any free kick. If a free kick goes into the receivers' end zone without any new impulse, the ball is

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(Numbers in parentheses denote page on which advertisement may be found)

ON PAGE 32 ARE OTHER LISTINGS AND FORM FOR SIGNATURE

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dead as soon as it is in touch. In this respect, the free kick is now treated the same as a kick from scrimmage.

**Snap and Free-Kick Infractions.** For all snap infractions except offside, identical penalties are now prescribed. These acts include backfield illegally in motion, illegal shift, false start, encroachment on the neutral zone and similar acts. In all, there are 17 possible infractions before or with the snap, and six possible infractions on the free kick.

For all of these (except offside), the penalty will be five yards. The ball will remain dead on the assumption that play was not legally started. Such acts are considered acts between downs. On fumbles and recoveries by an opponent, the latter will not have the right to retain possession. The referee will be required to blow the ball dead immediately on all such plays. But regardless of when the whistle is blown, the ball is not in play.

This results in much rule simplification and eliminates prodigious feats of memory by officials, coaches, and players, who, in the past, were compelled to memorize many possibilities.

**Fair Catch.** The 1943 code will "kill" the ball as soon as the kick is caught, provided the fair-catch signal has been given. In the past, complications have resulted from prescribing the number of steps which could be taken and by outlining all the possibilities on fumbles or muffs during the steps.

A fair catch may not be made in the end zone since all the kicks are now dead as soon as they touch anything behind the goal line. The penalty for fair-catch interference will be covered by general rule; that is, since it is a foul during a loose ball-loss of 15 at the previous spot (or spot of return kick). However, the offended team has the option of choosing an awarded fair catch (with no distance penalty).

**Try for Point.** The try will always be made from the midpoint of the two-yard line (in six-man, the three yard line). Also, if there is a foul during a try, the general enforcement rules apply. In the past, there were exceptions to general rules because Team A was permitted to move the ball anywhere along the yard line for the try.

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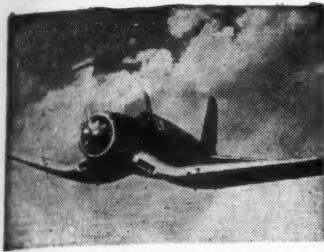
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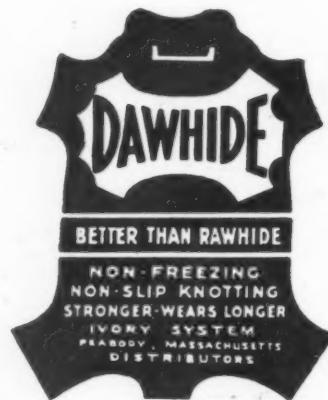
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